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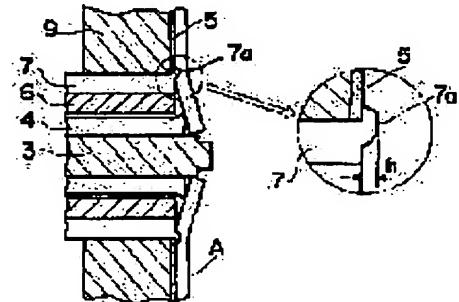
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(54) APPARATUS FOR PRODUCING SUBSRATE OF INFORMATION SIGNAL RECORDING MEDIUM

(57)Abstract:

PURPOSE: To industrially obtain the substrate satisfying the requirements specified in ISO by forming an inner peripheral pawl for fixing a stamper in the apparatus for production for injection molding of the substrate and constituting the height of this inner peripheral pawl to a specific length or below.

CONSTITUTION: On the apparatus for production for injection molding of the substrate for an information signal recording medium, the inner peripheral pawl 7a for fixing the stamper 5 is formed and the height h of this pawl 7a is made to be 0.3mm. The height h of the inner peripheral pawl 7a is the size regulated from the part facing the tamper 5 up to the tallest part. This height h is preferably made to be 0.25 to 0.3mm. The substrate warped to 2 to 6mrad in such a manner that the side to be recorded with information is recessed toward the inner peripheral reference plane of the substrate according to such apparatus for production for the substrate. The information signal recording medium provided with the film, such as recording film, on the substrate constituted in such a manner satisfies the requirements specified in ISO.



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CLAIMS

[Claim(s)]

[Claim 1] The substrate manufacturing installation of the information signal record medium characterized by having come to constitute the inner circumference pawl which is the manufacturing installation which carries out injection molding of the substrate of an information signal record medium, and fixes La Stampa to this manufacturing installation, and constituting the height of this inner circumference pawl in about 0.3mm or less.

[Claim 2] The substrate manufacturing installation of the information signal record medium of claim 1 characterized by constituting the height of an inner circumference pawl in about 0.25-0.3mm.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the substrate manufacturing installation of the information signal record medium of CD, CD-ROM, or a veneer specification like a 3.5 inches magneto-optic disk.

[0002]

[Description of the Prior Art] The optical recording medium (optical disk) is produced so that the camber angle from datum level may be within the limits of **5mrad as set by the ISO standard. In addition, although the problem has not occurred when glass is used as a substrate ingredient, this value When organic resin ingredients, such as polycarbonate resin and acrylic resin, are used as a substrate ingredient, If various film, such as antistatic coat film for the rebound ace court film for preventing the organic protective coat of the ultraviolet curing mold which protects the magneto-optic-recording film and the magneto-optic-recording film, and with [on the front face of a substrate] a blemish, and dust removing, is prepared on a substrate In this phase, the camber angle in a resin substrate simple substance cannot be maintained, but it is big. And the magneto-optic-recording film was especially prepared in the front-face side of one side, and in the case of the optical disk at the time of using the optical disk produced by the conventional approach, i.e., resin, as substrate material, and the optical disk of the veneer specification that the front-face side of other sides is a resin substrate, compared with the thing in case the magneto-optic-recording film is prepared in both sides, curvature was remarkable and large.

[0003] The present condition is manufacturing the optical disk of **5mrad finally, making it offset each other or controlling [for this reason, predict beforehand the amount of curvatures at the time of preparing the above film, and form the curvature of hard flow in the substrate beforehand,] curvature by the membrane formation process of each film.

[0004]

[Problem(s) to be Solved by the Invention] By the way, so that the increment in a camber angle may be offset with the film added to a resin substrate, as a result of carrying out by the research to curvature being wholeheartedly pushed by this invention person If the substrate is beforehand curved to the specific thing positively at the time of injection molding, the camber angle of the produced optical recording medium will become small. A revelation that the optical recording medium of less than **2 mrad will be obtained for the camber angle under the environment of the temperature of 20 degrees C and 50% of relative humidity is obtained. "The substrate of the optical recording medium characterized by having curved two to 6 mrad so that the side on which it is the substrate of the optical recording medium of a veneer specification with which information is recorded on the whole surface, and said information is recorded to the inner circumference datum level of this substrate may serve as a concave configuration" came to be proposed based on this.

[0005] However, examination about the manufacture conditions of the substrate which presents such a description was not carried out to a detail. Therefore, the purpose of this invention is offering the manufacturing installation which can offer industrially the substrate of the optical disk with which are satisfied of an ISO standard. It is offering the manufacturing installation which can offer industrially the substrate which has curved two to 6 mrad so that the side on which information's is especially recorded to the inner circumference datum level of a substrate may serve as a concave configuration.

[0006]

[Means for Solving the Problem] In order to attain the aforementioned purpose, as a result of research being wholeheartedly pushed by this invention person, it has turned out big it is fundamentally influenced according to the structure of metal mold rather than the substrate which has curved two to 6 mrad so that the

side on which information is recorded to the inner circumference datum level of a substrate may serve as a concave configuration is based on control of parameters, such as a die temperature at the time of injection molding, resin temperature, and a cooldown delay. It was found out that especially the curvature of a substrate is influenced by the height of the pawl (the 2nd gate) of the inner circumference section which fixes La Stamp of shaping metal mold.

[0007] That is, the manufacturing installation of an optical disk substrate is constituted as shown in drawing 1 $R > 1$, and the product ejection piston 4 for exfoliating and taking out the gate cut piston 3 for opening the feed hole of a substrate and a product substrate from a periphery from La Stamp 5, to the movable side metal mold 1, the stationery sleeve 6, and the La Stamp inner circumference holder 7 that carries out fixed maintenance of La Stamp 5 are arranged further at the outside. La Stamp 5 is stuck to the movable side mirror plane 9 by pawl (the 2nd gate) 7a of the La Stamp inner circumference holder 7, and the La Stamp periphery holder 8. The melting resin (for example, polycarbonate resin etc.) which passed through the sprue bush 10 arranged at the fixed side metal mold 2 is filled up with actual shaping into La Stamp 5, the La Stamp periphery holder 8, and the cavity 12 fabricated by the fixed side mirror plane 11. Then, the substrate fabricated by that a feed hole is opened according to ejection of the gate cut piston 3 and coincidence is separated from the sprue section. After the resin in a cavity 12 carries out cooling solidification, the movable side metal mold 1 and the fixed side metal mold 2 are estranged, and the substrate A made of resin stuck to La Stamp 5 is made to exfoliate from La Stamp 5 by the product ejection piston 4, and is taken out as a product substrate A.

[0008] It has turned out in the above-mentioned forming cycle that the manifestation of the curvature of Substrate A is discovered at the time of the ejection of the product substrate A, i.e., ejection of the product ejection piston 4. By the way, although it is the direction of the camber angle of Substrate A, since the core of Substrate A is projected from the signal side side (La Stamp 5 side) of a substrate, it is expected that it is easy to curve in the direction in which a signal forming face side becomes concave. However, it was not such in fact. Namely, since pawl (the 2nd gate) 7a of the La Stamp inner circumference holder 7 existed in the outside of the product ejection piston 4 as shown in drawing 2, when it was product ejection, deformation of Substrate A took place so that pawl 7a might be used as the supporting point, and Substrate A had curved as a result in the direction in which a signal forming face side serves as a convex. In order to obtain the substrate which has curved two to 6 mrad so that the side on which information is recorded to the inner circumference datum level of a substrate may serve as a concave configuration, as a result of, as for this phenomenon, it turning out that it is greatly dependent on height h of pawl 7a and research piling up wholeheartedly, it was found out that it is important to set height h of pawl 7a to 0.3mm or less.

[0009] This invention is attained based on such knowledge, and the purpose of this invention is a manufacturing installation which carries out injection molding of the substrate of an information signal record medium, and is attained by the substrate manufacturing installation of the information signal record medium characterized by having come to constitute the inner circumference pawl which fixes La Stamp to this manufacturing installation, and constituting the height of this inner circumference pawl in about 0.3mm or less.

[0010] In this invention, height h of an inner circumference pawl is a dimension therefore specified by the summit from the part which faces La Stamp, and, as for height h of this inner circumference pawl, being constituted by about 0.25-0.3mm is desirable. And if injection-molding equipment is constituted as mentioned above, injection-molding conditions are the things from the former, and are enough. In addition, for resin temperature, about 300-350 degrees C and a die temperature are [about 100-120 degrees C and the cooldown delay of desirable injection-molding conditions] about five to 15 sec(s).

[0011] The substrate of the information signal record medium of this invention consists of resin ingredients excellent in the transparency of polyester resin, polyolefin resin, polyamide resin, polycarbonate resin, Pori methacrylic resin, etc. As a recording layer prepared on the substrate side of an information signal record medium, a record film monolayer, record film/protective coat, a protective coat / record film / protective coat, a protective coat / record film / protective coat / reflective film is mentioned. Magneto-optic-recording ingredients, such as TbFeCo, etc. are mentioned as an ingredient which constitutes record film. A dielectric etc. is used as an ingredient which constitutes a protective coat, and aluminum, an aluminium alloy, etc. are used as an ingredient which constitutes the reflective film. The rebound ace court film prepared on a recording layer For example, TORIMECHI roll pro pantry (meta) acrylate, Pen TAERISURITORUTORI (meta) acrylate, pentaerythritol tetrapod (meta) acrylate, PENTA glycero RUTORI (meta) acrylate, GURISERINTORI (meta) acrylate, JIPENTAERISURITORUTORI (meta) acrylate, dipentaerythritol tetrapod (meta) acrylate, The Pori (meta) acrylate of polyhydric alcohol, such as dipentaerythritol PENTA

(meta) acrylate and dipentaerythritol hexa (meta) acrylate, Ultraviolet curing mold resin, such as urethane acrylate which is a product with the acrylic monomer which has a hydroxyl group three mols [per poly isocyanate 1 molecule] or more (meta), heat-curing mold resin, electron ray hardening mold resin, etc. are used.

[0012] Although an example is given and this invention is explained concretely hereafter, this invention is not restricted to this.

[0013]

[Example]

[Example 1] What set to 0.3mm the height of pawl 7a of the 2nd gate in a manufacturing installation (a great portion of configuration was the same as that of the equipment from the former, and the outline was shown in drawing 1) which was described above was prepared.

[0014] And height h of pawl 7a carried out injection molding of the substrate of a 3.5 inch optical disk using the polycarbonate in resin temperature [of 330 degrees C], die-temperature [of 110 degrees C], and cooldown delay 6 seconds, using the injection-molding equipment which is 0.3mm. Thus, the camber angle of the obtained substrate was fabricated so that the side on which information is recorded to the inner circumference datum level of a substrate might serve as a concave configuration, and the camber angle was 2mrad(s).

[0015] And even if film, such as antistatic coat film for the rebound ace court film for preventing the magneto-optic-recording film, the organic protective coat of an ultraviolet curing mold, and with [on the front face of a substrate] a blemish to this substrate and dust removing, was prepared, the camber angle from datum level was settled in the thing of **5mrad within the limits as set by the ISO standard.

[Example 2] Height h of pawl 7a carried out injection molding of the substrate of a 3.5 inch optical disk using the polycarbonate in resin temperature [of 330 degrees C], die-temperature [of 110 degrees C], and cooldown delay 6 seconds, using the injection-molding equipment which is 0.25mm.

[0016] Thus, the camber angle of the obtained substrate was fabricated so that the side on which information is recorded to the inner circumference datum level of a substrate might serve as a concave configuration, and the camber angle was 4mrad(s). And even if film, such as antistatic coat film for the rebound ace court film for preventing the magneto-optic-recording film, the organic protective coat of an ultraviolet curing mold, and with [on the front face of a substrate] a blemish to this substrate and dust removing, was prepared, the camber angle from datum level was settled in the thing of **5mrad within the limits as set by the ISO standard.

[0017] [Example 3] Height h of pawl 7a carried out injection molding of the substrate of a 3.5 inch optical disk using the polycarbonate in resin temperature [of 330 degrees C], die-temperature [of 115 degrees C], and cooldown delay 6 seconds, using the injection-molding equipment which is 0.25mm. Thus, the camber angle of the obtained substrate was fabricated so that the side on which information is recorded to the inner circumference datum level of a substrate might serve as a concave configuration, and the camber angle was 6mrad(s).

[0018] And even if film, such as antistatic coat film for the rebound ace court film for preventing the magneto-optic-recording film, the organic protective coat of an ultraviolet curing mold, and with [on the front face of a substrate] a blemish to this substrate and dust removing, was prepared, the camber angle from datum level was settled in the thing of **5mrad within the limits as set by the ISO standard.

[Example 1 of a comparison] Height h of pawl 7a carried out injection molding of the substrate of a 3.5 inch optical disk using the polycarbonate in resin temperature [of 330 degrees C], die-temperature [of 120 degrees C], and cooldown delay 6 seconds, using the injection-molding equipment which is 0.35mm.

[0019] Thus, the camber angle of the obtained substrate was fabricated so that the side on which information is recorded to the inner circumference datum level of a substrate might serve as a convex configuration, and the camber angle was 2mrad(s). And when film, such as antistatic coat film for the rebound ace court film for preventing the magneto-optic-recording film, the organic protective coat of an ultraviolet curing mold, and with [on the front face of a substrate] a blemish to this substrate and dust removing, was prepared, the camber angle from datum level was not settled in the thing of **5mrad within the limits as set by the ISO standard.

[0020]

[Effect] According to this invention, the information signal record medium with which the substrate which has curved two to 6 mrad was industrially obtained so that the side on which information is recorded to the inner circumference datum level of a substrate might serve as a concave configuration, and film, such as record film, was prepared in the substrate of such a configuration has the features that the ISO standard is

satisfied.

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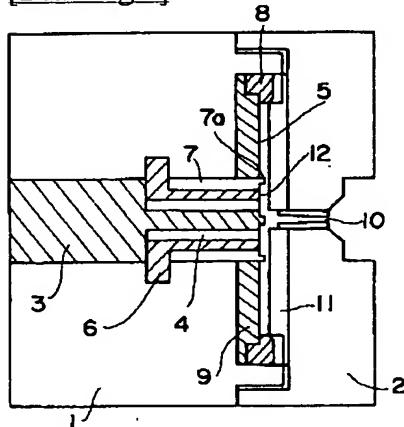
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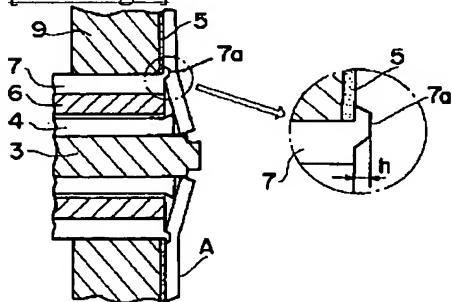
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DRAWINGS

[Drawing 1]



[Drawing 2]



[Translation done.]

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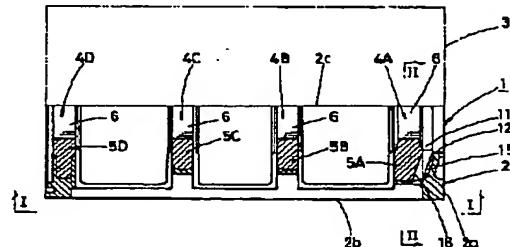
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(54)【考案の名称】 エンジンのクランクシャフト軸受構造

(57)【要約】 (修正有)

【目的】 軽合金性のシリンダブロックを備えたものにおいて、軸端室に連通するオイルリターン通路の形成による軸受部の剛性低下を可及的に抑制して該軸受部の剛性維持を図り、併せて軸受部における母材金属と軸受部材との結合力の向上を図る。

【構成】 軽合金鋳物製のロアブロック2に設けられる複数の軸受部4A～4Dに、鉄系材よりなり且つ半円状の軸受面6を形成した軸受部材5A～5Dを鋳包み、各軸受部のうち、最も変速機固定端2aに近い軸受部4Aと変速機固定端2aとの間に軸端室の下半部を構成する半円状凹部11を形成し、軸受部4Aに設けられた軸受部材5Aの幅方向略中央部に凹部11側に膨出部15を形成し、膨出部に半円状凹部とロアブロック下面2bとを連通するオイル通路16を設けた。



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【実用新案登録請求の範囲】

【請求項1】 その軸方向の一端側に変速機が締着固定されるシリンダブロックを、相互に衝合合体される軽合金鋳物製のアッパーブロックとロアブロックとで構成する一方、該ロアブロック側にその軸方向に適宜離間して設けられる複数のクランクシャフト軸支用の軸受部には、鉄系材よりなり且つ上方に開口する半円状の軸受面を形成した軸受部材をそれぞれ鋳包み、さらに該各軸受部のうち、最も変速機固定端に近い位置に形成された軸受部と上記変速機固定端との間には軸端室の下半部を構成する半円状凹部を上記軸受面の径向外側を周囲するようにして形成するとともに、該軸受部材の幅方向略中央部に該凹部側に膨出する膨出部を形成し且つ該膨出部には該凹部とロアブロック下面とを連通するオイル通路*

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*を形成したことを特徴とするエンジンのクランクシャフト軸受構造。

【図面の簡単な説明】

【図1A】本考案の実施例にかかるクランクシャフト軸受構造を備えたシリンダブロックのロアブロック部分の縦断面図である。

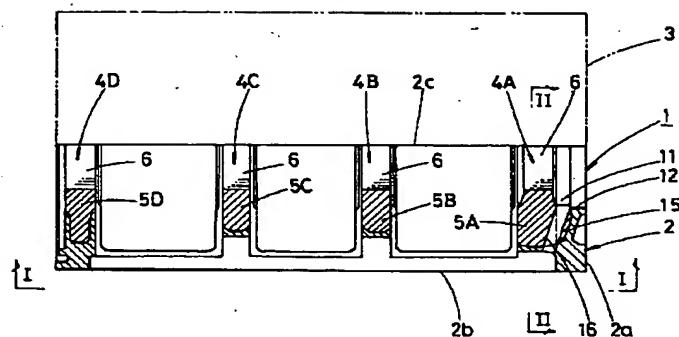
【図1B】図1AのI—I矢視図である。

【図2】図1AのII—II縦断面図である。

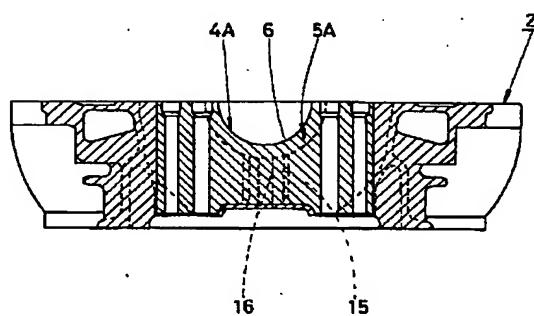
【符号の説明】

10 1はシリンダブロック、2はロアブロック、3はアッパーブロック、4A～4Dは軸受部、5A～5Dは軸受部材、6は軸受面、11は凹部、12はオイルシール受部、15は膨出部、16はオイルリターン通路である。

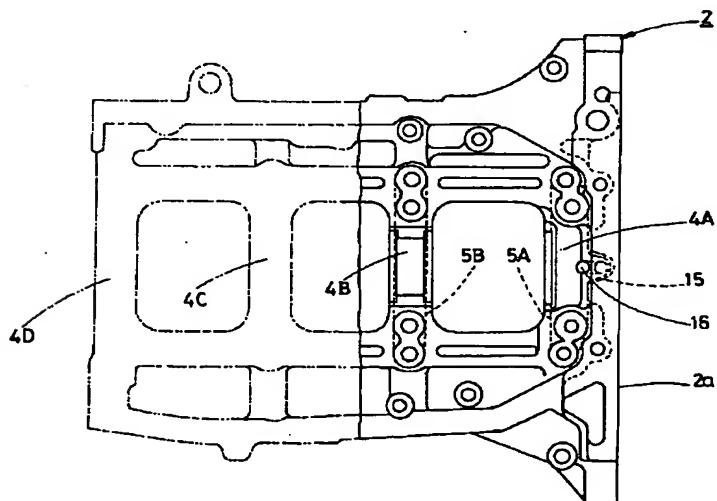
【図1A】



【図2】



【図1B】



【考案の詳細な説明】

【0001】

【産業上の利用分野】

本考案は、エンジンのクランクシャフト軸受構造に関するものである。

【0002】

【従来の技術】

一般に自動車用エンジンのシリンダーブロックにおいては、その軸方向に並んだ複数のクランクシャフト用軸受部のうち、最も変速機取付端に近い軸受部の直外方位置に該軸受部を囲繞するような凹部を形成し、且つその外端部にオイルシールを取り付けて該凹部を軸受部を潤滑したオイルを捕集する軸端室とともに、該軸端室に捕集されたオイルをシリンダーブロック下面側に取り付けられるオイルパン側にリターンさせるためのオイルリターン通路を形成している。(例えば、実開昭61-159610号公報参照)。

【0003】

一方、近年におけるエンジンの軽量化の要請から、従来鋳鉄鋳物で一体構成とされるのが通例であったシリンダーブロック(例えば、上掲公知例がこれに該当する)を、軽量の軽合金鋳物製とする傾向にあり、その場合、クランクシャフト軸受部の支持剛性あるいは耐久性を確保するという観点から、該軸受部には鉄系材(通常鋳鉄)からなる軸受部材を母材金属に一体的に鋳包む手法が採用される。

【0004】

【考案が解決しようとする課題】

ところで、上述のようにシリンダーブロックの各軸受部のうち、最も変速機取付端寄りに位置する軸受部の直外方位置に設けた軸端室にオイルリターン通路を形成する場合、従来は上掲公知例に開示されるように、該軸受部の一部を縦方向に貫通させてこれを形成するのが通例である。この場合、上掲公知例のようにシリンダーブロックが鋳鉄鋳物により一体構成されるものにあっては、元々その剛性が高いところから軸受部の剛性維持上、さほど問題は生じないが、例えばシリンダーブロックを軽合金鋳物により構成するものにあっては素材そのものの剛性が低いことから、軸受部の一部を貫通させてオイルリターン通路を形成した場合、オイ

ルリターン通路の形成による軸受部の剛性低下の影響が到底看過し難いものとなる。

【0005】

そこで本考案は、軸受部に軸受部材を鋳包んだ軽合金性のシリンダブロックを備えたものにおいて、軸端室に連通するオイルリターン通路の形成による軸受部の剛性低下を可及的に抑制して該軸受部の剛性維持を図り、併せて軸受部における母材金属と軸受部材との結合力の向上を図るようにしたエンジンのクランクシャフト軸受構造を提案せんとしてなされたものである。

【0006】

【課題を解決するための手段】

本考案ではかかる課題を解決するための具体的手段として、その軸方向の一端側に変速機が締着固定されるシリンダブロックを、相互に衝合合体される軽合金鋳物製のアッパープロックとロアープロックとで構成する一方、該ロアープロック側にその軸方向に適宜離間して設けられる複数のクランクシャフト軸支用の軸受部には、鉄系材よりなり且つ上方に開口する半円状の軸受面を形成した軸受部材をそれぞれ鋳包み、さらに該各軸受部のうち、最も変速機固定端に近い位置に形成された軸受部と上記変速機固定端との間には軸端室の下半部を構成する半円状凹部を上記軸受面の径方向外側を囲繞するようにして形成するとともに、該軸受部材の幅方向略中央部に該凹部側に膨出する膨出部を形成し且つ該膨出部には該凹部とロアープロック下面とを連通するオイル通路を形成したことを特徴としている。

【0007】

【作用】

本考案ではかかる構成とすることにより、軸受部を潤滑した後に軸端室に捕集されるオイルは、該軸端室からオイルリターン通路を通ってロアープロック下面に取り付けられたオイルパン側に流下回収される。この場合、軸受部に鉄系材からなる軸受部材を鋳包み、該軸受部材にオイルリターン通路を形成しているため、例えば軸受部全体を軽合金で構成し且つここにオイルリターン通路を形成した場合に比して、該オイルリターン通路の形成に伴う軸受部の剛性低下が可及的に抑

制されることになる。

【0008】

また、この軸受部に設けられた膨出部も母材金属によって一体的に鋳包されることから、例えばこの膨出部を設けていない場合に比して該軸受部とこれを鋳包む母材金属との接触面積が増加し、それだけ両者の結合力が高められることとなる。

【0009】

【考案の効果】

従って、本考案のエンジンのクランクシャフト軸受構造によれば、軸受部に鋳包まれる軸受部材にオイルリターン通路を形成しているため、オイルリターン通路の形成によるロアプロックの軸受部の剛性低下を、例えば該ロアプロック全体を軽合金製とし且つその軸受部に直接オイルリターン通路を形成する場合に比して、可及的に低く抑えて該軸受部の剛性を良好に維持することができ、また該オイルリターン通路の形成用に設けた膨出部をも母材金属によって一体的に鋳包むことによりこの両者間の結合力を高めることができ、これらの相乗的効果として該軸受部におけるクランクシャフトの支持性能を良好に維持し且つその強度上の信頼性を高めることができるという効果が得られるものである。

【0010】

【実施例】

以下、添付図面に示す実施例に基づいて本考案のエンジンのクランクシャフト軸受構造を詳細に説明すると、図1Aには本考案の実施例にかかるクランクシャフト軸受構造を備えた自動車用エンジンのシリンダーブロック1が示されている。このシリンダーブロック1は、アルミ合金鋳物製とされ、後述のロアプロック2と、該ロアプロック2の上面2cに衝合合体されるアッパーブロック3とからなる上下二分割構造とされている。また、このロアプロック2の下面2bにはオイルパン(図示省略)が取付けられる。

【0011】

上記ロアプロック2は、図1A及び図1Bにそれぞれ示すように、シリンダーブロック1の下半部を構成するものであって、上述のようにアルミ合金鋳物によつ

て一体形成される。そして、このロアプロック2は、その軸方向の一端2aを変速機固定端2aとともに、その内部にはクランクシャフト(図示省略)支承用の4個の軸受部4A～4Dをその軸方向に所定間隔をもって一体的に形成している。

【0012】

この場合、この実施例のロアプロック2においては、上記各軸受部4A～4Dの支持剛性を確保する観点から、図2に示すように、該各軸受部4A～4Dに、半円状の軸受面6を有する所定厚さの鉄系材、例えば鑄鉄鑄物からなる軸受部材5A～5Dをそれぞれ母材金属であるアルミ合金中に鑄包んでこれを一体化せしめている。

【0013】

一方、このように軸受部材5A～5Dを鑄包んで構成された各軸受部4A～4Dのうち、上記変速機固定端2aに最も近い位置に設けられた第1軸受部4Aの直外方位置には、その軸受面6の径方向外側を所定間隔をもって囲繞するようにして半円状の凹部11が該変速機固定端2a側に開口した状態で形成されている。この凹部11は、上記アッパープロック3との間で潤滑オイル捕集用の所定大きさの軸端室を形成するものであって、その外端部はオイルシール受部12とされている。そして、このように第1軸受部4Aと変速機固定端2aとの間に凹部11を形成した場合、該凹部11に捕集された潤滑オイルをロアプロック2の下面2bに取り付けられるオイルパン側に戻すためのオイルリターン通路16を形成する必要がある。

【0014】

この場合、この実施例においては、本考案を適用して、上記オイルリターン通路16を形成するために、上記軸受部材5Aの変速機固定端2a寄り側面の幅方向略中央位置に、該軸受部材5Aから変速機固定端2a側に適宜膨出して上記凹部11から下方に延びる膨出部15を設け、該膨出部15内を上下方向に貫通した状態で上記オイルリターン通路16を形成している。尚、この軸受部材5Aの膨出部15の外面部分も該軸受部材5Aの本体部と同様に母材金属によって鑄包まれている。

【0015】

このように、母材金属としてのアルミ合金中に鋳鉄鋳物製の軸受部材5Aを鋳包んで軸受部4Aを構成し、且つこの軸受部材5Aにオイルリターン通路16を形成した場合には、例えば従来のようにアルミ合金一体成形のロアプロックの軸受部に直接オイルリターン通路を形成する場合に比べて、該軸受部材5Aの剛性がアルミ合金に比べて高い分だけ該オイルリターン通路16を形成したことによりする軸受部4Aの剛性低下が少なく、アルミ合金製のロアプロック2の軸受部4Aにオイルリターン通路16を形成したにもかかわらず該軸受部4Aの剛性を高く維持することができるものである。

【0016】

さらに、この実施例では、上記軸受部材5Aの膨出部15をもその本体部と同様に母材金属によって一体的に鋳包んでいるため、例えば該膨出部15を設けず該軸受部材5Aの側面を平面状とした場合に比して、該軸受部材5Aと母材金属との接触面積が増加することから、該軸受部材5Aと母材金属との結合力がより一層高められ、該軸受部4Aの強度上の信頼性がさらに向上するものである。

【0017】

これらの結果、アルミ合金製のロアプロック2におけるクランクシャフトの支持性能あるいはその信頼性が位置図と向上し、延いてはシリンダブロック1全体としての性能向上に寄与し得るものである。